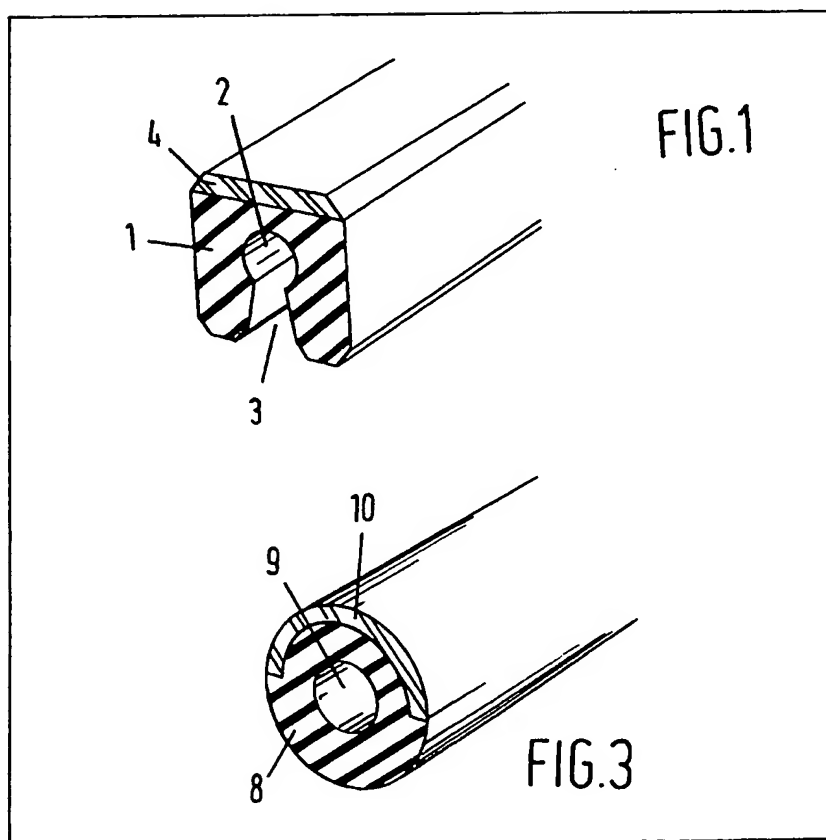


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(54) Resilient buffer or seal

(57) A buffer or seal consisting of a body 1 or 8 of a resiliently deformable material, e.g. rubber, while a smooth and wear-resistant layer 4 or 10, e.g. of synthetic resin, is applied on at least one face or a part thereof. Particularly applicable to marine fenders.



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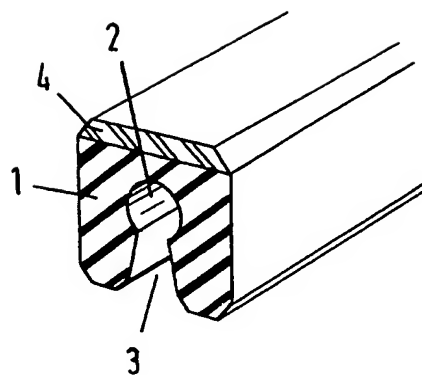


FIG. 1

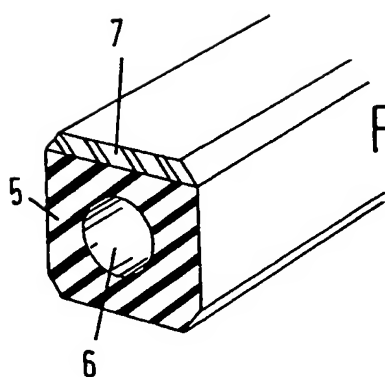


FIG. 2

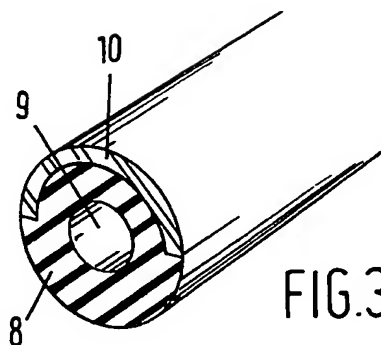


FIG. 3

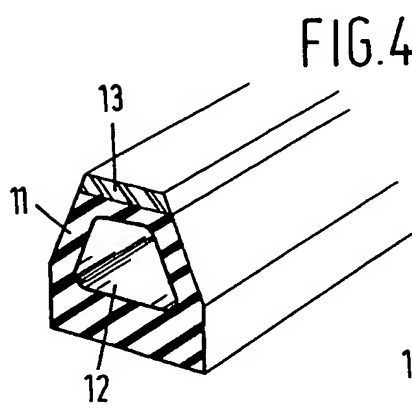


FIG. 4

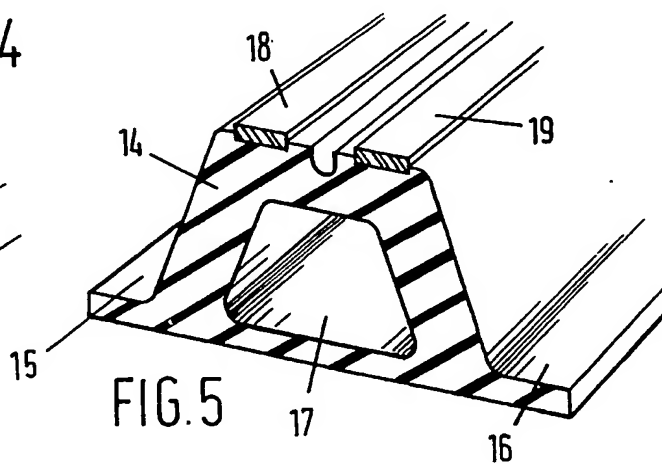


FIG. 5

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SPECIFICATION

Buffer, seal or the like

5 Buffers in the form of fenders are largely applied on quay walls, but also vessels are provided with such means in order to minimize the adverse effects of collisions and impacts.

10 A buffer as mentioned above comprises substantially a resiliently deformable body, normally of rubber or similar compressible material.

There occurs a reaction force due to the deformation and the substantial coefficient of friction of the rubber, in case of longitudinal or transverse movements, produces undesirable forces on the rubber or through the rubber on a body moving therealong. The results are serious damage to the buffer or fender.

20 In order to eliminate the above described drawback, it has already been proposed to use sliding members in the form of steel/wood; steel/synthetic material, wood or synthetic material constructions, but these have to be attached to the rubber by means of mechanical connections. An other possibility is that said sliding members are properly positioned by means of special suspension or attachment provisions for the rubber.

25 The application possibilities to apply sliding members are limited and practically impossible in small constructions. Application of metal attachment means results in corrosion and defects of the system.

30 It is the object of the invention to eliminate the above-discussed drawbacks in a simple and practical manner. To this effect according to the invention a smooth, wear-resistant layer is applied on at least one face or a portion of the resiliently deformable body of the buffer or the like. This is done effectively in such a manner that said layer remains indissolubly connected to the rubber body, irrespective of the direction and magnitude of the forces acting thereon.

35 As a result mechanical attachment means for the layer to the body become superfluous, resulting in a simpler assembly and a saving in cost.

Effectively, the body of the buffer consists of rubber and the smooth wear-resistant layer of synthetic material. The interconnection between the body and said layer may be a glued joint.

40 However, classes of material are chosen in particular for the smooth and wear-resistant layer which enable a strong joint, e.g. through vulcanization.

45 The feature proposed by the invention has the advantage that upon simultaneous impression and displacement along the buffer, irrespective of the direction, the longitudinal and transverse forces are substantially eliminated with maintenance of the resilience, consequently an energy-absorbing capacity and capacity to produce a reaction force in a direction perpendicular to the buffer.

The invention will now be explained by way of example, with reference to the accompanying highly diagrammatic drawing, wherein:

50 *Figures 1-5* show some possible embodiments in cross-section.

The invention will be described as being applied to a buffer, as used to protect quays and vessels against damage as a result of impacts and which are indicated as fender.

70 However, the invention is not restricted to the above métier and could also be applied as seal e.g. for lock gates.

Figure 1 shows the buffer in the form of a body 1 of deformable material, for which purpose rubber is the conventional substance. The body 1 is provided with a recess 2 having an open connection 3. Thus the required elasticity is imparted to the body as a whole.

80 On the body 1 there is applied a layer 4 of wear-resistant material and having a low coefficient of friction, which is bonded to the body 1 preferably through vulcanization. It will be clear that for this purpose a material is chosen which enables bonding through vulcanization and synthetic resin has been found a proper material, without further use of mechanical means. Figure 2 shows a buffer consisting of a body 5 having a recess 6. The wear-resistant, smooth layer is indicated by 7.

85 Figure 3 shows a round embodiment for a buffer. The body 8 again consists of rubber and is provided with a longitudinal channel 9. The wear-resistant synthetic layer is indicated by 10.

90 The buffer shown in Figure 4 consists of an angular body 11 of rubber and having a recess 12. The wear-resistant smooth synthetic layer is represented by 13.

95 Figure 5 shows an embodiment of a buffer of rubber having a body 14 whereon flanges 15 and 16 are mounted. 17 shows the recess which imparts improved resilient properties to the body. 18 and 19 indicate layers of wear-resistant, smooth synthetic material.

100 The attachment of the buffer to a part to be protected is effected in a known manner, which does not form part of the invention and which has not been further indicated in detail.

105 The buffer according to the invention has the following advantages in comparison with the prior art buffer of a homogeneous rubber body:

- 110 1) low coefficient of friction of the contact face, consequently no longitudinal and transverse reaction forces;
- 2) substantial wear-resistance of the contact face;
- 3) no mechanical joints between rubber and sliding member to be applied;
- 115 4) no electrostatic charging properties.

Through a proper choice of the synthetic material and the rubber, an electrostatic charge in the buffer due to friction may be prevented.

120 CLAIMS

1. A buffer, seal or the like consisting of a body of a resiliently deformable material, characterized in that a smooth and wear-resistant layer is applied on at least one face or a part thereof.

125 2. A buffer, seal or the like according to claim 1, characterized in that the smooth and wear-resistant layer is attached to the body by glueing or, if the classes of material are suitable therefor, by vulcani-

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zation or a similar bonding treatment.

3. A buffer, seal or the like according to claims 1-2, characterized in that the body consists of rubber and the smooth wear-resistant layer of synthetic material.

4. A buffer, seal or the like according to claims 1-3, characterized in that the resiliently deformable body has an open space or a hollow design.

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